8.0 CLOSURE PLAN

The closure plans described in this section of the permit application identifies how ATK-Bacchus will close the regulated units located on Plant 1. Plans have been developed for the closure of the following hazardous waste storage units: HS-1, ES-1, Segment Storage, and RH-1.

8.1 CLOSURE PLANS AND CLOSURE COSTS ESTIMATES

In developing closure plans for the hazardous waste storage units, ATK-Bacchus used the requirements of R315-8-7 and R315-8-9.9 UAC. R315-8-7 UAC incorporates by reference the requirements of 40 CFR 264 Subparts G. The closure costs estimated were made in accordance with R315-8-8 UAC, which incorporates by reference the requirements of 40 CFR 264 Subpart H.

ATK-Bacchus assumed, for the purposes of estimating the closure costs, that all of the hazardous waste management units were filled to their respective maximum waste storage capacities as identified in the RCRA Part A Permit Application for Plant 1. If storage capacities change, the Permit will be modified.

Rocket motors stored at ATK-Bacchus that are classified as "hazardous waste," will be transported to an off-site TSDF for treatment and disposal. On occasion, it may be necessary to treat a hazardous waste rocket motor on-site due to transportation restrictions.

8.2 CLEAN-UP APPROACH

The Part A and Permit for Plant 1 only authorized ATK-Bacchus to store hazardous waste. The units identified in the Part A have not been used for treatment or disposal of hazardous waste. The source of any contamination occurring in these containment buildings should be limited to spills onto concrete or asphalt surfaces during the operational life of these units. The storage units will be cleaned using steam and/or high-pressure water until surfaces are decontaminated. This method has been routinely used at ATK-Bacchus to clean various areas as a part of normal plant maintenance. Wash water will be collected using permanent berms and sumps, or if necessary temporary berms to prevent contaminating the area surrounding the units. Past experience indicates that contaminant levels in the cleanup wash water will be minimal, and after characterization the water can meet discharge limits for a POTW or UPDES discharge permit. Therefore, it is not anticipated that the wastewater generated during closure will require special handling. The wastewater will be collected according to ATK-Bacchus practices, it will then be stored, tested, and disposed. If it is determined that the wastewater cannot meet discharge limits, it will be characterized and disposed of in accordance with applicable rules and regulations.

Because of the hazardous nature of the explosive materials on site and complex plant safety procedures, facility personnel will be involved in closure activities more than would be the case at other types of facilities. For cost-estimating purposes, it was assumed that a third-party consulting firm will be employed to clean the explosive storage units after explosive materials have been removed, conduct verification sampling, and write the final closure reports.

Once the hazardous waste storage units have been decontaminated and verified clean, ATK-Bacchus will submit a written report to the Executive Secretary requesting concurrence on the closure certification. Before any unit is determined to be clean closed, ATK-Bacchus must have concurrence from the Executive Secretary. Final disposition of any unit that has been clean closed will be the prerogative of ATK-Bacchus or the current proprietor of the facility. If a unit can not be clean closed ATK-Bacchus will develop an appropriate and applicable post-closure care mechanism.

8.3 CLEAN CLOSURE CRITERIA

For the purposes of estimating closure costs, it is assumed that all of the regulated units will be clean closed. Clean closure can be achieved by cleaning the units to background conditions or by meeting the clean closure equivalency as defined in R315-101-6(c)(1) UAC. All closures will assess real and potential impacts to human and ecological exposures.

Preliminary remediation goals can be established prior to implementing any of the closure plans in this section. ATK-Bacchus may use the screening levels published by USEPA Region III "Risk-Based Concentrations (RBC) and the USEPA Region IX Preliminary Remediation Goals (PRG), or they can establish site-specific risk-based clean closure goals in accordance with R315-101-5.2 UAC.

8.4 VERIFICATION SAMPLING APPROACH

To determine whether each hazardous waste management unit has been successfully decontaminated and cleaned up, ATK-Bacchus will use the following techniques:

- Core samples will be collected from the floors in buildings where liquid hazardous wastes were stored, and from locations where porous flooring materials are present. Sample locations will be biased toward visible staining or other indication of potential contamination, such as the source of the material, coloration, or floor integrity. Cores obtained from the floors will have the top 1-inch (unless staining or discoloration indicates contamination below that depth) sawed off and pulverized in the laboratory before being analyzed for the contaminants of concern. Material used for samples will not exceed 1-inch maximum in depth. If additional material is needed for analysis, additional cores will be collected by co-locating additional cores near the original sample point. In situ samples will always be discrete samples and not composited.

- Wipe samples will be collected from the wall surfaces in the buildings when applicable. The sample will be collected by wiping the surface of a designated area using a template with a piece of solvent moistened gauze to remove any remaining contaminants. The wipe will be placed in to a glass vial for storage and transport. Samples will be handled according to applicable sample preservation and chain-of-custody requirements.

- Final rinse water samples will be collected in buildings where non-liquid hazardous wastes were stored and from all non-porous surfaces. The rinse water samples will be analyzed and evaluated to determine whether the exposed surfaces of the buildings have been adequately decontaminated.

- Soil samples will be collected where the potential existed for hazardous waste materials to be transposed to soil areas surrounding the designated building area. Samples will be collected in areas with the greatest potential to have received waste materials, visible staining of soil, or other indication of contamination. Each sample will be discrete and not composited with samples from other locations. However, the sample for non-volatile compounds may be composited within the sample interval. Analytical results will be compared with closure performance standard presented for the specific hazardous waste management unit.

- Prior to implementing the closure plans described in this section of the application, ATK-Bacchus will develop Data Quality Objectives (DQOs) for all verification samples. The DQOs will be submitted to the Executive Secretary for approval prior to implementing any of the closure plans.

- The unit will be considered clean if the verification samples show that all contaminant concentration levels are less than the background concentrations or a risk-based clean closure equivalency as defined in R315-101-6(c)(1) UAC.
- Sampling and handling will be conducted according to the requirement and protocols established by the USEPA and DEQ.
- All samples will be processed and analyzed by a Utah Certified Laboratory in accordance with R444-14-3(2) UAC. Analytical and extraction methods to be used are shown in Table 8-1.

TABLE 8-1
ANALYTICAL AND EXTRACTION METHODS

Parameter	Analytical Procedure	Extraction Procedure
Volatiles	SW-846; 8260B	SW-846; 5030B(W), 5035S
Semi-Volatiles	SW-846; 8270C	SW-846; 3510C(W), 3550B(S)
RCRA Metals	SW-846; 6010B	SW-846; 3005A(W), 3050B(S)
Mercury	SW-846; 7470A/7471A	SW-846; 7470A(W), 7471A(S)
Explosives	SW-846; 8330 Modified	SW-846; 8330 Modified
Perchlorate	EPA 314.0	EPA 314.0

8.5 HS-1

HS-1 is a waste storage unit where non-explosive solid (non-liquid), semi-solid, and liquid hazardous and non-hazardous wastes are stored. This unit is used to store and consolidate waste prior to off-site shipment to an authorized TSDF. HS-1 (Figure 2-2.2) consists of Buildings 8562, 8567, 8568, and Sheds A-D located south of the main structure. HS-1 has a combined storage capacity of 15,900 gallons. Capacity for each area is listed in Table 8-2 below.

TABLE 8-2
BUILDING STORAGE CAPACITIES

Building	Capacity (gallons)
8562	4900
8567	1200
8568	9350
Sheds A-D	450

8.5.1 Site Description

Indoor concrete floor surfaces are sealed with a commercial sealant, and the concrete joints are caulked with silicone. The sealant provides ease of cleanup and mitigates leaks or spills from migrating into the concrete pad.

Building 8562 (Figure 2-2.4) is an enclosed structure, built on a monolithic cement pad surrounded by a minimum 6-inch curb on all sides. The inside dimensions of this building are 21 ft x 52 ft. The floor slopes to the north and east. Any liquids released during the operational life of this building will be contained and collected along the north and east side of the building. The average depth along the north wall is 0.30 ft. The average depth along the east wall is 0.25 ft. To conservatively determine the containment capacity the size of the containment was estimated based on a depth of 0.25 ft along both the north and east wall. A width of 21 ft along the north wall and 35 ft along the east wall and will cover approximately one-half the room, using a line that bisects the room running from the northwest corner to a point about 35 ft along the east wall. The 35 ft distance along the east wall is based on the floor elevation where liquids could start to flow through the door into the work area of Building 8657. The containment volume for this area is calculated to hold about 700 gallons.

Building 8567 (Figure 2-2.4) is divided by a wall into two separate rooms. The west half of the building is office space, and the east half is a work area. Wastes are only stored in the eastern half, work area, of this building. The entire building is equipped with heat and lighting.

The floor in the work area of Building 8567 was constructed using a monolithic cast concrete slab with a 6-inch curb on the south and north walls. The inside dimensions of the work area is 24 ft x 20 ft. The main concern is to ensure that liquids will be contained and not released through the north personnel door**.** The area adjacent to the personnel door is approximately 0.12 ft higher than the surrounding floor area. The floor forms the secondary containment in the area west of the personnel door with a liquid collection trench forming the low point of the containment. The dimensions of the containment area are approximately 12 ft x 24 ft x 0.12 ft. The volume of this area can be approximated by calculating one-half the volume of the rectangle or 17 ft^3. The room also has a floor trench that is an architectural feature from the previous occupancy of the building. The average dimensions of the trench are 0.4 ft deep, 0.5 ft wide, and 24 ft long for a volume of about 5 ft^3. The total volume contained in the trench and area west of the personnel door is about 22 ft^3, or 165 gallons

Building 8568 (Figures 2-2.7 and 2-2.8) is an enclosed wood-framed structure fitted with two large overhead doors. It measures 30 ft wide x 60 ft long. This building has a concrete floor with no secondary containment and is primarily used for the storage of non-liquid wastes. Liquid wastes stored in this building will be stored on pallets that provide secondary-containment.

The four wood-framed sheds each have approximate dimensions of 10 ft x 10 ft, and are located south of Building 8562 (Figure 2-2.2). Actual dimensions vary slightly for each shed. The sheds are designated A, B, C, and D. Shed A and B are used to store hazardous waste. Shed C is used to store supplies. Shed D is a mechanical room for the facility. The sheds have a concrete floor with no secondary containment.

Shed A is used to store unique wastes such as gas cylinders and containers that may off-gas, such as water wet aluminum powder. Waste materials are stored on shelves, in a cabinet, or on a containment pallet. Shed B contains cabinets for storing small containers. The cabinets are constructed of steel with dimensions 40 in. x 40 in. x 74 in. The storage cabinets are self-contained, with a 13-gallon capacity liquid sump. No secondary containment is required in this shed. These small container cabinets are identical to cabinets in Building 8562. Sheds C and D have not been used to store hazardous wastes or materials.

8.5.2 HS-1 Closure Plan

The closure plan detailed in this section was developed with the assumption that HS-1 can and will be clean closed. The plan describes the procedures that will be used to clean, decontaminate, and verify closure of all applicable structures and equipment at HS-1, and how closure standards will be established. Any change or amendment to this plan will be done in accordance with R315-8-7 UAC and 40 CFR 264.112(c).

8.5.3 Closure Performance Standard

This unit will be clean closed by either cleaning the unit until it meets background conditions or by meeting a clean closure equivalency as defined in R315-101-6(c)(1) UAC. After closure, HS-1 may be used for other purposes, or may be demolished. Post-closure care for HS-1 is not anticipated.

8.5.4 Operational History of Spills or Releases at HS-1

At the time this plan was written there was no history of any major spills occurring at HS-1. There is a record of minor spills, less than one gallon, of waste material. Whenever a spill occurs, the waste material was absorbed immediately and disposed according to the applicable regulations. Prior to closure the operational history of HS-1 will be reviewed to determine when and where spills have occurred. It is anticipated that all spills or releases will have been contained within the secondary containment, however, prior to closure ATK-Bacchus will examine the condition of the floor and secondary containment and identify any cracks or gaps and determine whether the closure plan needs to be amended.

8.5.5 Maximum Waste Inventory at HS-1

Wastes stored in HS-1 include: acids, bases, lab waste, organic compounds, paints, solvents, resins, used oils, and other miscellaneous materials. Based on the operating history for this unit, the maximum inventory of hazardous waste documented on-site is the maximum capacity shown in Table 8-2.

8.5.6 Inventory Removal, Disposal, and Decontamination of Structure/Equipment

All hazardous wastes stored at the time of closure will be shipped to an approved TSDF. Only authorized transporters and approved TSDFs facilities will be used. This activity will be completed within 90 days after receiving the final volume of hazardous waste. Container storage areas, equipment, structure, etc., will be decontaminated by steam cleaning and/or washing with high pressure water and scrub brushes. An environmentally safe detergent or degreaser may be used. Decontamination water will be squeegeed into the concrete sumps at the edge of the building. The decontamination process is expected to generate approximately 500 gallons of wastewater and residue. Structures and equipment requiring decontamination include but are not limited to the following:

- Building floors;
- Walls where splashing may have caused contamination;
- Miscellaneous equipment permanently attached to the facility; and,
- Building drains and sumps.

Decontamination water will be collected from the sumps or bermed areas of the floors using a wet/dry vacuum, mop buckets, or transfer pumps into drums or containers, or will be removed by a vacuum truck. The sumps will be cleaned using the above-described techniques and the additional decontamination water will be collected.

8.5.7 Verification and QA/QC Samples

Verification samples will be collected separately from each storage and waste handling building at HS-1. The storage and waste handling areas are: the chemical handling room in Building 8567, storage areas in Building 8562 and Building 8568, and Sheds A and B.

From previous experience, contaminants in the decontamination wastewater are expected to be very low. Wash water will be collected and, if possible, sent to a local POTW following approval or verification that discharge limits can be met.

To demonstrate adequate decontamination, verification samples will be collected from each of the storage and handling areas. Concrete core samples will be collected at two locations in both Buildings 8562 and 8567. Sample locations for the cores will be decided based on the discussion in Section 8.4. Final rinse samples of the floors and walls will be collected from the floor and/or sumps of all HS-1 buildings. If the area does not have a sump, then samples will be collected from bermed areas of the floor designed to catch wash and rinse waters. One final rinse verification sample will be collected from each building at HS-1. Wipe samples will be collected from two walls in Buildings 8562 and 8567. Samples will be collected according to the procedure described in Section 8.4.

In addition to the verification samples identified in Table 8-3, QA/QC samples will be collected during each day of verification sampling. During closure activities field and trip blanks will be collected daily, duplicate samples will be collected according to the bullet below. The following number and type of QA/QC samples will be collected:

- A field blank filled with de-ionized water will be exposed during sampling and analyzed for accidental or incidental contamination.
- A trip blank bottle will be filled with de-ionized water and carried with the decontamination/sampling crew to HS-1. The trip blank bottles shall be handled identically to the handling methods used for sample collection and subjected to the same analyses.
- One (1) blind duplicate sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Table 8-3 (found in the *Tables* section following this chapter) identifies the number of verification and QA/QC samples that will be collected form each storage and handling building at HS-1. Samples will be properly labeled, sealed, and sent to a certified analytical laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols. No residue or contamination is expected to remain on or in the structures and equipment following the decontamination process. Structures and permanent fixtures may be kept for future use. There is no intention to break up and dispose of the concrete pads or catch basins. Prior to re-use of the HS-1 facility, ATK-Bacchus will have the structural integrity of HS-1 examined by a competent structural engineer to determine whether it has been compromised. The engineer will document the results of the examination.

8.5.8 Closure Report and Certification

Upon completion of the closure a written report will be provided to the Executive Secretary certifying that the closure was completed in accordance with the plan. The report will include a summary of the operational history of HS-1, copies of all analytical results generated during closure operations, copies of the QA/QC data, data validation reports, copies of manifests that accompanied off-site shipments, characterization of decontamination water/residue, documentation that the closure of HS-1 met the performance standard identified in Section 8.5.3, a closure certification, and a copy of the structural integrity examination report. A certification of closure according to 40 CFR 264.115 will be submitted by registered mail to the Executive Secretary within 60 days of the completion of the final closure.

8.5.9 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK-Bacchus will submit a request to the Executive Secretary. All hazardous wastes will be removed or treated within 90 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes latest. Final closure activities will be completed within 180 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever is later.

8.5.10 Post-Closure Care

The closure plan described above anticipates that HS-1 will be clean closed and will not require post-closure care. If at the conclusion of the closure activities it is determined that any part of HS-1 can not be clean closed, ATK-Bacchus will develop an appropriate and applicable post-closure care plan for all areas of this unit that can not be clean closed. Any proposal for post-closure care will be developed in accordance with R315-8-7 and 8 UAC and 40 CFR 264, Subpart G and H, and submitted to the Executive Secretary for approval.

8.5.11 Closure Cost Estimate

The cost estimate for the closure of HS-1 is presented in Table 8-4.

8.6 ES-1

ES-1 is a hazardous waste storage unit that is used by ATK-Bacchus for the storage of propellant and explosive wastes.

8.6.1 Site Description

ES-1 is a totally enclosed concrete and steel structure, with a lead-lined floor. The building was originally constructed in 1961 for storing and weighing dry propellant ingredients. Except for the south-facing dock area, the sides are bunkered with gravel and sand. The earthen berm is held in place by wooden beams on the south side. The purpose of the berm is to minimize the potential hazard to facilities, equipment, and personnel in the event of a detonation within the building. ES-1 has the capacity to store up to 20,000 pounds of explosives or flammable solids. Figure 2-2.10 provides a floor plan and a typical storage configuration. The building is shown in Figure 2-2.9.

ES-1 has two storage areas that are separated for the storage of non-compatible containerized wastes. The floor is electrically-conductive for the continuous grounding of personnel. The floor is elevated to truck-bed height to facilitate loading and unloading operations. The building is protected by a deluge sprinkler system. Fire symbols appropriate for the greatest explosive waste hazard are clearly posted on the exterior of the building.

8.6.2 ES-1 Closure Plan

The closure plan detailed in this section was developed with the assumption that ES-1 will be clean closed. The plan describes the procedures that will be used to clean, decontaminate, and verify closure of all applicable structures and equipment at ES-1, and how the closure standard will be established. Any change or amendment to this plan will be done in accordance with R315-8-7 UAC and 40 CFR 264.112(c).

8.6.3 Closure Performance Standard

This unit will be clean closed by either cleaning the unit until it meets background conditions or by meeting a clean closure equivalency as defined in R315-101-6(c)(1) UAC. After closure, ES-1 may be used for other purposes, or may be demolished. Post-closure care for ES-1 is not anticipated.

8.6.4 Operational History of Spills or Releases at ES-1

At the time this plan was written there was no history of any major spills occurring at ES-1. Whenever a minor spill occurred, it was immediately cleaned up. Prior to closure the operational history of ES-1 will be reviewed to determine when and where spills have occurred. Prior to implementation of the closure plan, the floor in ES-1 will be evaluated for cracks and gaps. If cracks or gaps exist, the closure plan will be amended to assess the potential migration of contaminants through the floor of ES-1.

8.6.5 Maximum Waste Inventory at ES-1

Based on our operating history, the maximum inventory of hazardous waste documented on-site was equal to capacity, approximately 20,000 pounds. The principal waste stored at ES-1 has been HMX, staged for transportation and disposal at an off-site TSDF. Prior to implementing the closure plan, the operational history will be reviewed to determine what reactive hazardous waste or constituents ATK-Bacchus stored at the ES-1 during its operational life.

8.6.6 Inventory Removal, Disposal, and Decontamination of Structure/Equipment

All waste explosives in storage at the time of closure will be shipped to an approved TSDF or taken to the NIROP Burning Grounds for treatment. If wastes are treated at the NIROP Burning Grounds all treatment residues will be collected and transported off-site to an approved TSDF. The storage areas, structure, and all equipment will be cleaned and decontaminated by steam cleaning and/or washing with high pressure water and scrub brushes. A temporary berm will be constructed using plastic and railroad ties or a similar structure to contain wash water. Wash water will be collected and transferred into 55-gallon drums or similar vessel. An environmentally safe detergent, if necessary, may be used. The decontamination process is expected to generate approximately 500 gallons of wastewater and residue.

The building may be subdivided into more than one area for cleaning purposes. Structures and equipment requiring decontamination include but are limited to the following:

- The concrete floor in the building;
- Walls that may have been exposed to contamination; and
- Miscellaneous equipment permanently attached to the facility.

All material used to construct the temporary berm will be collected, characterized, and discarded according to applicable and appropriate waste management rules.

8.6.7 Verification and QA/QC Samples

Decontamination and verification samples will be collected from both storage areas at ES-1. From experience, contaminants in the decontamination wastewater are expected to be very low. This wastewater will be sent to a local POTW following approval or verification that discharge limits can be met.

To demonstrate adequate decontamination, verification samples will be collected from each of the storage areas. Final rinse samples of the floors and walls will be collected. Wipe samples will be collected from two walls in each storage area. Samples will be collected according to the procedure described in Section 8.4.

In addition to the clean closure verification samples identified in Table 8-5, the following QA/QC samples will be collected during each day of verification sampling:

- A field blank filled with de-ionized water will be exposed during sampling, and then analyzed to detect accidental or incidental contamination, during each day of sampling.
- One (1) blind duplicate sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Table 8-5 identifies the number of verification and QA/QC samples that ATK-Bacchus expects to collect during the closure of ES-1. Samples will be properly labeled, sealed, and sent to a Utah Certified Laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols. No residue or contamination is expected to remain on or in the structures and equipment following the decontamination process. Structures and permanent fixtures may be kept for future use. There is no intention to break up and dispose of the building as part of the closure.

8.6.8 Closure Report and Certification

Upon completion of the closure, a report will be provided to the Executive Secretary certifying that the closure was completed in accordance with the plan. The report will include a summary of the operational history of ES-1, copies of the analytical results, copies of the QA/QC data, data validation report(s), copies of manifests that accompanied off-site shipments of wastes, characterization of decontamination water/residue, documentation that the closure of ES-1 met the performance standard identified in Section 8.6.3, and a closure certification. A certification of closure according to 40 CFR 264.115 will be submitted by registered mail to the Executive Secretary within 60 days of the completion of the final closure.

8.6.9 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK-Bacchus will submit a request to the Executive Secretary. All hazardous wastes will be removed or treated within 90 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever occurs last. Final closure activities will be completed within 180 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever is later.

8.6.10 Post-Closure Care

The closure plan described above anticipates that ES-1 will be clean closed and will not require post-closure care. If at the conclusion of the closure activities it is determined that ES-1 can not be clean closed, ATK-Bacchus will develop an appropriate and applicable post-closure care plan for all areas of this unit that can not be clean closed. Any proposal for post-closure care will be developed in accordance with R315-8-7 and 8 UAC and 40 CFR 264, Subpart G and H, and submitted to the Executive Secretary for approval.

8.6.11 Closure Cost Estimate

The cost estimate for the closure of ES-1 is presented in Table 8-6.

8.7 SEGMENT STORAGE

Segment Storage is a hazardous waste storage unit constructed for the storage of large rocket motors and containers of Class 1.3 explosives. Segment Storage is used for the storage of Class 1.3 explosive, explosive ingredients, and explosive wastes.

8.7.1 Site Description

The facility is located just to the southeast of HS-1 in Plant 1, and consists of an asphalt pad 100 ft x 75 ft; a total of 7,500 square feet. The facility is protected from lightning by a "tent" system (a telephone pole at each corner of the pad connected with a conductive wire). The pad and “tent” system are shown in Figure 2-2.11. The storage capacity for Segment Storage is 75,000 pounds; equivalent to one large rocket motor segment (e.g., GEM-60). For closure cost purposes it is assumed that one large rocket motor would be onsite at the time of closure.

8.7.2 Segment Storage Closure Plan

The closure plan detailed in this section was developed with the assumption that Segment Storage will be clean closed. The plan describes the procedures that will be used to clean decontaminate, and verify closure of all applicable structures and equipment at Segment Storage, and how the closure standard will be established. Any change or amendment to this plan will be done in accordance with R315-8-7 UAC and 40 CFR 264.112(c).

8.7.3 Closure Performance Standard

The closure criteria for the pad and surrounding soil will be to clean close by either cleaning the unit and surrounding soil until they meet background conditions, or by meeting a clean closure equivalency as defined in R315-101-6(c)(1) UAC. If the pad can be clean closed, the pad may be used for other purposes, or may be demolished. No specific Segment Storage post-closure monitoring is planned.

8.7.4 Operational History of Spills or Releases at Segment Storage

At the time this plan was written there was no history of any major spills occurring at Segment Storage. Prior to closure the operational history of Segment Storage will be reviewed to determine when and where any spills have occurred. Contaminated soil is not expected; however, limited sampling will be conducted to verify that it does not exist.

8.7.5 Maximum Waste Inventory at Segment Storage

Segment Storage has a storage capacity of 75,000 pounds of Class 1.3 propellant or explosives. The pad has been used to stage rocket motors, ammonium perchlorate, and other solid and hazardous wastes and products. Prior to implementing the closure plan the operational history will be reviewed to determine what reactive hazardous waste or constituents ATK-Bacchus stored at the Segment Storage during its operational life.

8.7.6 Inventory Removal and Decontamination of Pad

All hazardous wastes in storage at the time of closure will be taken to an approved TSDF for treatment and disposal. The pad will be cleaned to remove any visible dirt or debris present during closure. The pad will be swept, either by hand or using a commercial street sweeper, then pressure washed. Wash water will be collected and, if possible, sent to a local POTW following approval or verification that discharge limits have been met. It is assumed that the pad will be reused after closure for a purpose other than the storage of hazardous waste. A cost estimate for pad removal is not included in the closure costs. Soil contamination is not expected; however, if it is identified, the soil will be excavated, stabilized, and sent to an approved waste landfill for disposal. If soils contamination is identified, ATK-Bacchus will submit a supplemental closure plan to the Executive Secretary designed to assess magnitude and extent of the contamination. This supplemental plan will be submitted within 60 days of determining that soil contamination has occurred.

8.7.7 Verification and QA/QC Samples

To demonstrate adequate decontamination, verification samples will be collected from the storage pad and specific soil locations. Core samples of the asphalt will be collected at two locations. Locations for the cores will be decided based on the procedures described in Section 8.4. A final rinse sample from the pad cleaning will be collected. A total of four soil samples will be collected from the area adjacent to the pad, in the general direction of water runoff, i.e., to the north and east. In addition to the verification samples, QA/QC samples will be collected during each day of verification sampling. During closure activities field blanks will be collected daily and duplicate samples will also be collected according to the bullet below:

- A field blank filled with de-ionized water will be exposed during sampling and analyzed for accidental or incidental contamination.
- One (1) blind duplicate verification sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Table 8-7 identifies the number of verification and QA/QC samples ATK-Bacchus will collect during the closure of Segment Storage. Samples will be properly labeled, sealed, and sent to a Utah Certified Laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols. No residue or contamination is expected to remain on the pad or any of the equipment associated with Segment Storage after the cleaning process is complete, therefore, the pad may be kept for future use. There is no intention to break up and dispose of the pad as part of the closure.

8.7.8 Closure Report and Certification

Upon completion of the closure a report will be submitted to the Executive Secretary certifying that the closure was accomplished in accordance with the approved plan. The report will include a summary of the operational history of Segment Storage, copies of the analytical results, copies of the QA/QC data, data validation report(s), copies of any manifests that accompanied off-site shipments of wastes, characterization of all cleanup waste or residues, documentation that the closure of Segment Storage met the performance standard identified in Section 8.7.3, and a closure

certification. A certification of closure according to 40 CFR 264.115 will be submitted by registered mail to the Executive Secretary within 60 days of the completion of the final closure.

8.7.9 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK-Bacchus will make a request to the Executive Secretary. All hazardous wastes will be removed or treated within 90 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes latest. Final closure activities will be completed within 180 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes later.

8.7.10 Post-Closure Care

The closure plan described above anticipates that Segment Storage will be clean closed and will not require post-closure care. If at the conclusion of the closure activities it is determined that Segment Storage can not be clean closed, ATK-Bacchus will develop an appropriate and applicable post-closure care plan for this unit. Any proposal for post-closure care will be developed in accordance with R315-8-7 and 8 UAC and 40 CFR 264, Subpart G and H, and submitted to the Executive Secretary for approval.

8.7.11 Closure Cost Estimate

The cost estimate for the closure of Segment Storage is presented in Table 8-8.

8.8 RH-1

RH-1 is a hazardous waste storage unit used for the storage of waste rocket motors and explosives. RH-1 is permitted for 150,000 pounds of hazardous/explosive waste.

8.8.1 Site Description

RH-1 is a wood-framed, earthen-covered structure similar to ES-1. The northwest-facing front of the building is not earthen covered and consists of two large double doors (11 ft x 37 ft). A set of rails enter the building through these doors enabling rocket motors to be brought in on rail dollies. Figure 2-2.13 is a schematic of the building showing the location of the doors and the building dimensions. The area permitted for storage of hazardous wastes is only a portion of the building. The hazardous wastes include waste rocket motors, explosive ingredients, large sections of motors, and smaller pieces of propellant on pallets or in wooden boxes. The exterior of the building is shown in Figure 2-2.12. The interior of the building is shown in Figure 2-2.14.

8.8.2 RH-1 Closure Plan

The closure plan detailed in this section was developed with the assumption that RH-1 will be clean closed. The plan describes the procedures that will be used to clean decontaminate, and verify closure of all applicable structures and equipment at RH-1, and how the closure standard will be established. Any change or amendment to this plan will be done in accordance with R315-8-7 UAC and 40 CFR 264.112(c).

8.8.3 Closure Performance Standard

RH-1 will be clean closed by either cleaning the unit until it meets background conditions or by meeting a clean closure equivalency as defined in R315-101-6(c)(1) UAC. After closure, RH-1 may be used for other purposes, or may be demolished. Post-closure care for RH-1 is not anticipated.

8.8.4 Operational History of Spills or Releases at RH-1

At the time this plan was written there was no history of any major releases occurring at RH-1. Liquid wastes were not stored at RH-1. Therefore, whenever a minor spill occurred, it was in a solid form and immediately cleaned up. Prior to closure the operational history of RH-1 will be reviewed to determine when and where spills have occurred. It is anticipated that any contamination will be confined to the interior of RH-1, however, prior to closure ATK-Bacchus will examine the condition of the floor and identify any cracks or gaps and determine whether the closure plan needs to be amended.

8.8.5 Maximum Waste Inventory at RH-1

Total capacity (by weight) would be the equivalent of two GEM-60 rocket motors. It will be assumed that these motors will not be the property of the U.S government.

8.8.6 Inventory Removal, Disposal, and Decontamination of Structure/Equipment

Waste rocket motors will be transported to an approved TSDF for treatment and disposal. As part of the closure activities the floor of RH-1 will be inspected prior to initiating decontamination activities to identify any cracks where hazardous waste constituents may have migrated below of the surface of the concrete floor. If cracks are identified, they will be assessed. The storage areas, equipment, structure, etc., will be decontaminated by steam cleaning and/or washing with high pressure water and scrub brushes. A temporary berm will be constructed using plastic and railroad ties, or a similar structure, to contain wash water. Wash water will be collected into a 55-gallon drum or similar vessel. A detergent may be used. Approximately 500 gallons of wastewater and residue are expected. Structures and equipment requiring decontamination are:

- Concrete floor in the building;
- Walls that may have been exposed to contamination; and,
- Miscellaneous equipment permanently attached to the facility.

All material used to construct the temporary berm will be collected, characterized, and discarded according to applicable and appropriate waste management rules.

8.8.7 Verification and QA/QC Samples

Decontamination and verification samples will be collected from RH-1. From experience, the contaminants in the decontamination wastewater are expected to be very low. Wastewater will be sent to a local POTW following approval or verification that the discharge limits can be met.

To demonstrate adequate decontamination, one final rinse verification sample will be collected to evaluate cleaning of the walls and floor. In addition, two wipe samples will be collected from the walls inside the building according to the procedure described in Section 8.4.

In addition to the clean closure verification samples identified in Table 8-9, QA/QC samples will be collected during each day of the verification sampling. During each day of verification sampling the following QA/QC samples will be collected:

- A field blank filled with de-ionized water will be exposed during sampling then analyzed to detect accidental or incidental contamination.
- One (1) blind duplicate verification sample will be collected for each ten (10) verification samples collected (rounded up to the next greatest multiple of 10).

Table 8-9 identifies the number of verification and QA/QC samples that will be collected during the closure of RH-1. Samples will be properly labeled, sealed, and sent to a Utah Certified Laboratory for testing. Samples will be handled under USEPA chain-of-custody and sample preservation protocols. No residue or contamination is expected to remain on or in the structures and equipment following the decontamination process. Structures and permanent fixtures may be kept for future use. There is no intention to break up and dispose of the building as part of the closure.

8.8.8 Closure Report and Certification

Upon completion of the closure a report will be provided to the Executive Secretary certifying that the closure was completed in accordance with the plan. The report will include a summary of the operational history of RH-1, copies of manifests that accompany any off-site shipments, certification of destruction or verification of the final disposal of rocket motors shipped from RH-1, copies of the analytical results, copies of the QA/QC data, data validation report(s), characterization of all decontamination wastes and residues, documentation that the closure of RH-1 met the performance standard identified in Section 8.7.3, and a closure certification. A certification of closure according to 40 CFR 264.115 will be submitted by registered mail to the Executive Secretary within 60 days of the completion of the final closure.

8.8.9 Schedule for Closure

Final closure is expected to be initiated within 30 days of receipt of the final volume of hazardous wastes. If more time is required, ATK-Bacchus will submit a request to the Executive Secretary. All hazardous wastes will be removed or treated within 90 days of (1) plan approval, or (2) after receiving the final volume of hazardous waste, whichever comes later. Final closure activities will be completed within 180 days of (1) plan approval, or (2) after receiving authorization to transport rocket motors to the site of final disposition, whichever comes latest.

8.8.10 Post-Closure Care

The closure plan described above anticipates that RH-1 will be clean closed and will not require post-closure care. If at the conclusion of the closure activities it is determined that RH-1can not be clean closed, ATK-Bacchus will develop an appropriate and applicable post-closure care plan for this unit. Any proposal for post-closure care will be developed in accordance with R315-8-7 and 8 UAC and 40 CFR 264, Subpart G and H, and submitted to the Executive Secretary for approval.

8.8.11 Closure Cost Estimate

The cost estimate for the closure of RH-1 is presented in Table 8-10.

8.9. SUMMARY OF CLOSURE COSTS

Table 8-11 summarizes the Part A storage capacities of the facilities described in this document and lists the capacities that were used to estimate closure costs.

TABLE 8-11
SUMMARY OF STORAGE CAPACITIES

Storage Unit	Part A Capacity
HS-1 (8562)	4900 gal
HS-1 (8567)	1200 gal
HS-1 (8568)	9350 gal
HS-1 (Sheds A-D)	450 gal
ES-1	20,000 lb.
Segment Storage	75,000 lb.
RH-1	150,000 lb.

Table 8-12 summarizes the closure costs for the facilities described in this document. These costs represent maximum closure costs under any reasonable scenario. Costs are presented in 2008 dollars and are not escalated for future inflation.

TABLE 8-12
SUMMARY OF CLOSURE COSTS

Description of Unit	Estimated Cost
Hazardous Waste Container Storage Facility, HS-1	$135,837
Explosive/Hazardous Waste Storage Facility, ES-1	$58,878
Segment Storage	$74,146
Resthouse-1 Waste Storage Facility, RH-1	$113,276
TOTAL ESTIMATED COST	**$382,137**

8.9.1 Changes in Closure Plans

If it becomes necessary to change, amend or modify the closure plans for any of the regulated units, a written request submitted to the Executive Secretary for a permit modification in accordance with R315-8-7 UAC and 40 CFR 264.112(c).

8.9.2 Closure Cost Updates

Closure costs will be updated annually, within 90 days of the end of Alliant Techsystems' fiscal year. Because the fiscal year begins and ends in March, the annual update will be submitted as a separate document no later than June 30 of each year. The cost estimate will be adjusted using the Implicit Price Deflator for the Gross Domestic Product, published annually on March 30th for the preceding year by the U.S. Department of Commerce Bureau of Economic Analysis.

Other necessary adjustments to the closure costs resulting from changes in storage capacity, early closure of certain units, or other factors, will be made through a new engineering cost estimate for the applicable items and inflation updates for other items and explained in the annual cost update.

TABLES

SAMPLE VERIFICATION & CLOSURE COSTS

TABLE 8-3
HS-1 SAMPLE VERIFICATION

Area	Analytical Procedure			
	Volatiles	**Semi-Volatiles**	**Metals/Hg**	**Explosives/ Perchlorate**
Bldg. 8562				
Floor (Core)	2	2	2	2
Floor (Final Rinse)	1	1	1	1
Walls (Wipe)	2	2	2	2
Bldg. 8567				
Floor (Core)	2	2	2	2
Floor (Final Rinse)	1	1	1	1
Walls (Wipe)	2	2	2	2
Bldg. 8568				
Floor (Final Rinse)	1	1	1	1
Shed 'A'				
(Final Rinse)	1	1	1	1
Shed 'B'				
(Final Rinse)	1	1	1	1
Field Blank	2	2	2	2
Trip Blank	2	--	--	--
Blind Duplicate	2	2	2	2

TABLE 8-4

HS-1 CLOSURE COSTS

Item No.	Description	Means No./Source	Units	Est. Quan.	Unit Price	Total Price
1	Materials prep (CIH)	33-22-0111 x 2	hr	20	83.44	1,669
2	Materials prep (technician)	33-22-0112 x 2	hr	20	31.58	632
3	Load drums	33-19-0103	ea	330	4.87	1,607
4	Haul to Clean Harbors	33-19-0210	truck-mi	800	4.66	3,728
5	Landfill disposal	33-19-7214	drum	330	145.00	47,850
6	State disposal fee	Utah	ton	70	28.00	1,960
7	Truck washout/decon	33-19-0311	ea	4	158.00	632
8	Steam cleaning, floors and walls	33-17-0812	sf	8,400	0.84	7,056
9	Concrete core samples, 3” dia.	16-01-0123 x 2	ea	4	50.60	202
10	Wall wipe sample collection	33-22-0112 x 2	hr	8	65.00	520
11	Rinsate sample collection	33-22-0112 x 2	hr	8	65.00	520
12	Sample analyses, volatiles	Chemtech-Ford	ea	23	250.00	5,750
13	Sample analyses, semivolatiles	Chemtech-Ford	ea	22	390.00	8,580
14	Sample analyses, metals	Chemtech-Ford	ea	22	130.00	2,860
15	Sample analyses, explosives	Chemtech-Ford	ea	22	210.00	4,620
	SUBTOTAL					88,186
	Inflation adjustment (see Means 2008 Heavy Construction Cost Data)			1.141		100,620
	Misc. costs as a percent of the inflation-adjusted subtotal:					
	Mob/demob			5 %		5,031
	Engineering/permitting			10 %		10,062
	DSHW Oversight			10 %		10,062
	Contingency			10 %		10,062
	TOTAL ESTIMATED COST					**$ 135,837**

TABLE 8-5 ES-1 SAMPLE VERIFICATION		
Area	Analytical Procedure	
	Explosives/Perchlorate	RCRA Metals
Floor (Final Rinse)	2	2
Walls (Wipe)	4	4
Field Blank	1	1
Blind Duplicate	1	1

TABLE 8-6

ES-1 CLOSURE COSTS

Item No.	Description	Means No./Source	Units	Est. Quan.	Unit Price	Total Price
1	Materials prep (CIH)	33-22-0111 x 2	hr	20	83.44	1,669
2	Materials prep (technician)	33-22-0112 x 2	hr	20	31.58	632
3	Construct temporary berm	17-03-9903	cy	5	54.20	271
4	Load drums	33-19-0103	ea	30	4.87	146
5	Haul to Clean Harbors	33-19-0242	truck-mi	200	5.94	1,188
6	Landfill disposal	33-19-7202 x 7	drum	30	952.00	28,560
7	State disposal fee	Utah	ton	10	28.00	280
8	Truck washout/decon	33-19-0311	ea	1	158.00	158
9	Steam cleaning, floors and walls	33-17-0812	sf	4,000	0.39	1,560
10	Wall wipe sample collection	33-22-0122 x 2	hr	8	65.00	520
11	Rinsate sample collection	33-22-0122 x 2	hr	8	65.00	520
12	Sample analyses, metals	Chemtech-Ford	ea	8	130.00	1,040
13	Sample analyses, explosives	Chemtech-Ford	ea	8	210.00	1,680
	SUBTOTAL					38,224
	Inflation adjustment (see Means 2008 Heavy Construction Cost Data)			1.141		43,613
	Misc. costs as a percent of the inflation-adjusted subtotal:					
	Mob/demob			5	%	2,181
	Engineering/permitting			10	%	4,361
	DSHW Oversight			10	%	4,361
	Contingency			10	%	4,361
	TOTAL ESTIMATED COST					**$ 58,878**

TABLE 8-7
SEGMENT STORAGE SAMPLE VERIFICATION

Area	Analytical Procedure	
	RCRA Metals	**Explosives/Perchlorate**
Segment Storage Pad (Cores)	2	2
Pad (Final Rinse)	1	1
Surrounding Soil	4	4
Field Blank	1	1
Blind Duplicate	1	1

TABLE 8-8

SEGMENT STORAGE CLOSURE COSTS

Item No.	Description	Means No./Source	Units	Est. Quan.	Unit Price	Total Price
1	Materials prep (CIH)	33-22-0111 x 2	hr	10	83.44	834
2	Materials prep (technician)	33-22-0112 x 2	hr	10	31.58	316
3	Load rocket motor (crane)	Crew SIWSM	hr	10	393.57	3,936
4	Haul motor to Promontory	Crew COET2	hr	20	93.31	1,866
5	Off-load motor	Crew SIWSM	hr	10	393.57	3,936
6	Handling evaluation/planning	EarthFax/ATK	hr	160	65.00	10,400
7	Disposal planning	EarthFax/ATK	hr	120	65.00	7,800
8	Approval presentations	EarthFax/ATK	hr	40	65.00	2,600
9	Motor handling	EarthFax/ATK	hr	40	65.00	2,600
10	Preparing and setting charges	EarthFax/ATK	hr	20	65.00	1,300
11	Sweep area	33-22-0112 x 2	hr	8	65.00	520
12	Steam cleaning, pad	33-17-0812	sf	7,500	0.84	6,300
13	Load rinsate/sweepings	33-19-0103	drum	10	4.87	49
14	Haul to Clean Harbors	33-19-0210	truck-mi	200	2.32	464
15	Landfill disposal (from pad decon)	33-19-7214	drum	10	145.00	1,450
16	State disposal fee	Utah	ton	1	28.00	28
17	Truck washout/decon	33-19-0311	ea	2	158.00	316
18	Asphalt core samples, 3” dia.	16-01-0123 x 2	ea	2	50.60	101
19	Sample collection	33-22-0112 x 2	hr	4	65.00	260
20	Sample analyses, metals	Chemtech-Ford	ea	9	130.00	1,170
21	Sample analyses, explosives	Chemtech-Ford	ea	9	210.00	1,890
	SUBTOTAL					48,136
	Inflation adjustment (see Means 2008 Heavy Construction Cost Data)			1.141		54,923
	Misc. costs as a percent of the inflation-adjusted subtotal:					
	Mob/demob			5 %		2,746
	Engineering/permitting			10 %		5,492
	DSHW Oversight			10 %		5,492
	Contingency			10 %		5,492
	TOTAL ESTIMATED COST					**$ 74,146**

TABLE 8-9 RH-1 SAMPLE VERIFICATION		
Area	**Analytical Procedure**	
	Metals	**Explosives/Perchlorate**
Walls (Wipe)	2	2
Floor (Final Rinse)	1	1
Field Blank	1	1
Blind Duplicate	1	1

TABLE 8-10

RH-1 CLOSURE COSTS

Item No.	Description	Means No./Source	Units	Est. Quan.	Unit Price	Total Price
1	Materials prep (CIH)	33-22-0111 x 2	hr	10	83.44	834
	Materials prep (technician)	33-22-0112 x 2	hr	10	31.58	316
2	Load rocket motors (crane)	Crew SIWSM	hr	10	393.57	3,936
3	Haul motors to Promontory	Crew COET2	hr	20	93.31	1,866
4	Off-load motors	Crew SIWSM	hr	10	393.57	3,936
5	Handling evaluation/planning	EarthFax/ATK	hr	320	65.00	20,800
6	Disposal planning	EarthFax/ATK	hr	240	65.00	15,600
7	Approval presentations	EarthFax/ATK	hr	80	65.00	5,200
8	Motor handling	EarthFax/ATK	hr	80	65.00	5,200
9	Preparing and setting charges	EarthFax/ATK	hr	40	65.00	2,600
10	Construct temporary berm	17-03-9903	cy	10	54.20	542
11	Sweep area	33-22-0112 x 2	hr	8	65.00	520
12	Steam cleaning, pad	33-17-0812	sf	7,500	0.84	6,300
13	Load rinsate/sweepings	33-19-0103	drum	20	4.87	97
14	Haul to Clean Harbors	33-19-0210	truck-mi	200	4.66	932
15	Landfill disposal (from pad decon)	33-19-7214	drum	20	145.00	2,900
16	Sample collection	33-22-0112 x 2	hr	4	65.00	260
17	Sample analyses, metals	Chemtech-Ford	ea	5	130.00	650
18	Sample analyses, explosives	Chemtech-Ford	ea	5	210.00	1,050
	SUBTOTAL					73,539
	Inflation adjustment (see Means 2008 Heavy Construction Cost Data)			1.141		83,908
	Misc. costs as a percent of the inflation-adjusted subtotal:					
	Mob/demob			5 %		4,195
	Engineering/permitting			10 %		8,391
	DSHW Oversight			10 %		8,391
	Contingency			10 %		8,391
	TOTAL ESTIMATED COST					**$113,276**